

USSR

UDC 528.024.6:528.5

LAVRENT'YEV, I. V., MOVSESYAN, R. A., TAPLASHVILI, I. A., KHESED, Ye. A.

"The SGN-27D System for Hydrostatic Leveling"

Moscow, Geodeziya i Kartografiya, No 11, Nov 72, pp 23-28.

Abstract: The SGN-27D system is designed for high frequency hydrostatic leveling with remote determination of the position of the fluid level in connected vessels. It differs from other similar systems in its switching method in selecting sensors and in that it contains an internal pulse counter in the control unit, which makes it more convenient to use. In order to expand the area of application of hydrostatic leveling, a number of problems remain yet to be solved, one of which is consideration of temperature influences. Here, in the opinion of the author s, the two-fluid method should be used, developing devices with wide ranges of measurement of fluid level. Finally, all measurements must be performed automatically under program control. This will allow the most convenient hours to be used for measurement, for example the night hours. These problems are being studied at the Yerevan Polytechnical Institute imeni K. Marx and other organizations, and it is hoped that the method of hydrostatic leveling will become widely used in the near future.

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USSR

UDC 621.376

TAPTUNOV, E. I.

"Calculating the Operating Mode of an Amplifier with Parallel Regulation"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp. 3 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute, Vyp. 3), Leningrad, 1970, pp 110-115 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D226)

Translation: A procedure is proposed in this article for calculating the amplifier modes with parallel gain control for the case of an active load of significant magnitude. This takes place when the parallel control amplifier is the next to the last cascade of the video modulator. The calculation is based on constructing the dynamic characteristics. It is comparatively simple, clear and quite efficient.

USSR

UDC 62.620+549.212

PELINSKIY, A. A., TARABANOV, A. A., and LAZAREV, G. Ye., Kishinev-Moscow

"Test Results from the SG-T Material"

Moscow, Mashinovedeniye, No 2, Mar-Apr 71, pp 92-98

Abstract: Friction tests on SG-T type silicon impregnated graphite and graphitic carbon and silicon impregnated graphite in various liquid media (water, sulfuric acid, nitrous acid, etcetera) showed that the intensity of wear in SG-t is 5-10 times less than in 2P-1000 graphitic carbon and 100 times less than in materials on a Teflon-4 base. Numerous experiments showed that the thrust bearings are efficient in a friction pair of SG-T and SG-T at specific loads of 200 kg/cm^2 and more at 3000 rpm.

The tests on silicon impregnated graphite in circulating pumps and in pumps used for the transfer of aggressive liquid media recommend this material for wide-spread industrial utilization.

The results of the tests showed that SG-T silicon impregnated graphite reveals a high efficiency at friction points operating both in neutral liquid media and in a number of aggressive media.

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PELINSKIY, A. A., et al., Mashinovedeniye, No 2, Mar-Apr 71, pp 92-98

Block-schematics, photographs, and tables are used to illustrate the findings.

This article cites four literature references and contains five figures and two tables.

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BOBKOLSKIY, V. N., DERGUNOVA, V. S., IVANOVA, T. N., KOSTIKOV, V. I.,
LEVIN, V. Ya., TARABANOV, A. S.

"Contact Interaction of Melts in the System Silicon-Niobium with Carbon
Materials"

Konstrukts. Materialy na Osnove Grafita [Graphite-Based Structural Materials
-- Collection of Works], No 6, Moscow, Metallurgiya Press, 1971, pp 109-115
(Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No
2 B1358 from the Resume).

Translation: The wetting of pyrographite (I), vitreous carbon (II) and
graphite (III) by melts in the silicon-niobium system, produced by double
arc remelting in purified argon is studied. The final contact wetting angle
on porous (III) is equal to zero, on pore-free (I) and (II) it is greater than
zero. It is established that the chemical activity of these materials in re-
lationship to melts in the system Si-Nb increases in the sequence: I, II,
III.

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USSR

UDC 621.762:669.018.44(088.8)

DUKARSKIY, S. M., RODCHENKO, M. I., TARABANOV, A. S., MAKHALOV, P. N., and DUDIN, V. V.

"Press Powder for Manufacture of Heat Resistant Products"

USSR Author's Certificate No. 252165, Filed 14/06/67, Published 24/07/70
(Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract No. 2 G457 P)

Translation: The press powder includes a carbon-containing filler, organic binder, metal oxide easily reduced by carbon, such as TiO_2 , and impurities.

In order to increase the strength of products upon silicizing, the powder contains a phenol formaldehyde resin as a binder, graphite as the carbon-containing filler, with the components of the press powder in the following weight parts: graphite 65-85, TiO_2 8-15 per 100 weight parts of the mixture, phenol formaldehyde resin 5-20, impurity 0.5-5.

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1/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--EXPERIMENTAL INVESTIGATION OF THE HEAT CONDUCTIVITY OF CARBON
GRAPHITE MATERIALS -U-
AUTHOR-(02)-BELSKAYA, E.A., TARABANOV, A.S.
COUNTRY OF INFO--USSR
SOURCE--INZHENERNO-FIZICHESKII ZHURNAL, VOL. 18, APR. 1970, P. 696-701. 14
REFS. IN RUSSIAN.
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--THERMAL CONDUCTIVITY, CARBON, GRAPHITE, POROSITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2216 STEP NO--UR/0170/70/018/000/0696/0701
CIRC ACCESSION NO--AP0125796
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125796

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE HEAT CONDUCTIVITY OF CARBON GRAPHITE MATERIALS OF A POROSITY FROM 19 TO 80 PERCENT OVER A TEMPERATURE RANGE BETWEEN 500 AND 2200 DEG K. THE METHOD OF DETERMINING HEAT CONDUCTIVITY WAS BASED ON THE SOLUTION TO AN EQUATION DESCRIBING THE STEADY TEMPERATURE FIELD IN AN INFINITE THICK WALLED TUBE. A FORMULA IS DERIVED WHICH PROVIDES A SATISFACTORY DESCRIPTION OF THE EXPERIMENTAL CONDUCTIVITY DATA FOR POROSITIES RANGING FROM 19 TO 50 PERCENT OVER THE ENTIRE EXPERIMENTAL TEMPERATURE RANGE.

FACILITY: AKADEMIIA NAUK SSSR, INSTITUT VYSOKIKH TEMPERATUR, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 549.212+620.17

PANFEROV, V. M., TARABANOV, A. S., GRUNIN, L. P., and BOBKOVSKIY, V. N.

"Mechanical Properties of Silicized Graphite"

Moscow, Khimiya Tverdogo Topliva, No 4, 1970, pp 147-148

Abstract: A study was made of certain mechanical properties of silicized graphite prepared from dense graphite as starting material. This material had apparent specific gravity of 1.89 g/cm^3 , true specific gravity of 2.10 g/cm^3 , and porosity of 9.8%. Specimens for silicizing were cut along graphite billet molding axis. In silicized graphite coarse pores with equivalent radii greater than $6 \cdot 10^4 \text{ \AA}$ were filled with silicon and silicon carbide. The resulting silicized graphite had the following characteristics: density 2.15 g/cm^3 , porosity 3%, SiC content 13-15%, and Si content 1.5-2.3%. The experimental study of mechanical properties was performed on a unique stand developed by the strength department of the Scientific Research Institute of Mechanics at Moscow State University at 20, 600, 1100, 1450, 1650, and 1950° under monoaxial extension conditions. Heating from 20 to 1650° at the rate of 80°/min, exposure for 10 min, and cooling at 1100° at the rate of 280°/min was carried out with a programmed unit. It was found that the test material subjected to preliminary heat rolling became "embrittled." Its maximum failure deformation was lowered, strength was reduced, and the material's modulus of elasticity rose.

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TARABANOVA, V.P.

EFFECT OF THE EXTENT OF INITIAL STATE
ON THE STARTING TEMPERATURE OF
THE GAMMA-TO-ALPHA TRANSFORMATION IN STEELS

UDC 669.017

V. P. Tarabanova, S. S. Dyachenko, and A. M. Petrichenko, Kharkov
Motor Vehicle Research Institute, submitted to press 10 November 1971, final
version 21 April 1972

A decrease in the temperature of the beginning of the
 $\alpha \rightarrow \gamma$ transformation in steels with non-equilibrium
structures was observed, which is explained by the increase
of the free energy of the object in the origin of defects of
the crystalline structure in it. The density of dislocation
causing the decrease in temperature of the beginning of
the formation of austenite below the "equilibrium" critical
point A_{c1} was estimated.

It is known that the beginning of imperfections essentially affect the
kinetics and temperature characteristics of polymorphic transformation.
Thus, in reference [1], a decrease in the temperature of the polymorphic
transformation $\alpha \rightarrow \beta$ is observed in crystalline with an increase in the
density of the defect. On the contrary, in whiskers of zinc sulfide [2] and
iron [3] an increase in the temperature of the phase transition was noted.
As for the variation of the position of the critical points in the heating of
steel, as a function of the initial state, this problem so far remains a
matter for discussion. Some researchers have noted a decrease in the
temperature A_{c1} in the heating of steels with non-equilibrium structures
[4-6]. In later investigations, in conditions of fast heating, no decrease
in the critical point below the "equilibrium" position was observed in the
theoretical analysis of the variation of the free energy of the phase under
the effect of defects in the crystalline structure testifies to the fact that the
temperature of the phase transition in non-equilibrium objects must vary

* [defect $\rightarrow$ indicated throughout article. Error probable in title.]

Received by the
Library of the
30 March 1973

[1, 8]. The introduction of defects of the crystalline structure in the body leads to an irreversible increase in the free energy of the alloy, which may be described within the framework of conventional thermodynamic presentations by a certain additional term, predetermined by the number and chemical potential of the imperfection [9]. In this case the condition of phase equilibrium acquires the form

$$F_1 + U_1 = F_2 + U_2$$

(1)

where F_1 and F_2 represent the free energies of the phases in equilibrium into phases 1 and 2 by imperfections of the crystalline structure.

The increase in the free energy of the system with the introduction of imperfections into it changes the conditions of the formation of the nuclei of the new phase, which not only may affect the kinetics of the phase transformations, but also cause a phase transition not realized at the given temperature in equilibrium-crystals analogous to what occurs in bodies with high values of surface energy [10]. As a matter of fact, the phase transition $1 \rightarrow 2$ will occur if

$$F_1 + U_1 < F_2 + U_2$$

(2)

From expression (2) it follows that if even the chemical free energy $F_1 < F_2$, that is, in equilibrium conditions phase 1 is stable, in a crystal containing imperfections the free energy of phase 1 may turn out to be higher than in phase 2, which causes the occurrence of a phase transition.

From general considerations, the principles indicated must also be applied to the formation of austenite in the heating of steels, which leads to expect not only variations of the kinetic parameters $\rightarrow \gamma$ shifts of the transformation in objects with a non-equilibrium structure, but also study of this problem. This work is devoted to the

The basic material for the investigation was steel 20. The following variations of the initial state were selected: (1) hardening in water at 800°C; (2) annealing to lamellar perlite; (3) deformation by cold rolling ($\epsilon = 50\%$) of the steel annealed to lamellar perlite; (4) powder filled from hardened steel.

USSR

UDC: 621.396.6-181.48

TARABRIN, B. B., NISSEL'SON, L. I., BULATOV, T. A.

"Parametric Series of Integrated Microcircuits"

Elektron. promst'. Nauch.-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1972, No 1, pp 34-36 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8V244)

Translation: The paper takes up problems of standardizing the main parameters of microcircuits with regard to their functional peculiarities. Resumé.

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USSR

UDC 581.19:582.285.2

TARABRIN, G. A., CHKANIKOV, D. I., and KOSTINA, V. I., All-Union Research
Institute for Phytopathology imeni B. Vyazema

"Hydrolytic Enzymes of the Uredospores of Wheat Stem Rust"

Leningrad, Mikologiya i Fitopatologiya, Vol 7, No 5, 1973, pp 424-428

Abstract: Studies on the uredospores of the wheat stem rust agent, *Puccinia graminis* f. sp. *tritici*, showed high activities for β -glucosidase, α -galactosidase, α -mannosidase, acetyl esterase, and acid phosphatase; α -glucosidase was absent and β -galactosidase activity was relatively low. The activities of homogenates were not significantly higher than those of intact spores. Uredospores belonging to different races of this agent showed great variability to enzymatic activity, which may be related to virulence (ease of penetration into wheat tissues). Buds and primary hyphae showed high activities for β -glucosidase, α -galactosidase, and α -mannosidase.

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USSR

UDC 621.791.76.052:621.7.044.2:620.18

SAKHINOVSKAYA, Ye. B., Engineer, SEDYKH, V. S., Candidate of Technical Sciences,
TARABRIN, G. T., Candidate of Technical Sciences, TRYKOV, YU. P., Candidate of
Technical Sciences, Volgograd Polytechnic Institute

"Structural and Mechanical Nonuniformity of Explosion-Welded Steel-Aluminum
Joints"

Moscow, Svarochnoye proizvodstvo, No 9, 1972, pp 7-9

Abstract: A study was made of the structural and mechanical nonuniformity and strength of an explosion-welded three-layer composition of the two aluminum alloys AMg6+AD1 and Kh18N10T steel as a function of the kinetic energy of the impact, the scaling factor and the relative thickness of the aluminum sublayer. During explosion welding of this three-layer composition, an increase in the kinetic energy of the impact above W_0 leads to an increase in the proportional participation of the steel elements in the formation of the fused sections, gradual increase in their hardness and a sharp decrease in the strength of the AD1-Kh18N10T joint in the range of values $W > W_{critical}$. The process parameters, the welding schematic and the scaling factor have an effect on the structural and mechanical nonuniformity of the steel-aluminum joint. The strength characteristics of the explosion-welded AMg6+AD1+Kh18N10T compositional joint

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SAKHNOVSKAYA, Ye. B., et al., Svarochnoye proizvodstvo, No 9, 1972, pp 7-9

depend essentially on the relative thickness of the interstitial layer of aluminum and can be calculated by the formulas proposed earlier [O. A. Bakshi, Voprosy svarochnogo proizvodstva, Trudy ChPI, No 33, 1965; O. A. Bakshi, et al., Voprosy svarochnogo proizvodstva, Trudy ChPI, No 63, 1968]. The experimental data are plotted graphically, and the mechanisms of the formation of the mechanical and structural properties of the joints are discussed.

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USSR

UDC 621.372.852.1

LEVASHKIN, V. I. and TARABRIN, YU. K.

"Waveguide Separation Filter Based on a Slit Type Directed Coupler"

Elektron. tekhnika. Nauch.-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection of Articles. Super-High Frequency Electronics), 1972, vyp.5, pp 121-123 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B133)

Translation: A waveguide separation filter is described which is simple to produce, compact, and easily retuned within a broad range with respect to the random ordering of the frequencies of the input signals. Losses in each of the frequency channels do not exceed 0.2 db during 25-30 db decoupling between channels. This type of filter can be used for measuring the spurious radiation of super-high frequency units. Original article: one illustration and two bibliographic entries. Resume.

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USSR

UDC 616.891-072.8+616.891-07:616.154.452/.453

KARVASARSKIY, B. D., IOVLEV, B. V., KALININ, O. M., STABROVSKIY, Ye. M.,
SUSLOV, V. I., and TARABRINA, N. V., Department of Neuroses and Psycho-
therapy, Leningrad Scientific Research Psychoneurological Institute imeni
V. M. Bekhterev

"Connection Between Experimental Psychological Characteristics of the
Personality and Biochemical Indexes in Relation to Problems of the Study
of Psychic Stress in Neurotics"

Moscow, Zhurnal Nevropatologii i Psikhiiatrii, 1971, Vol 71, No 8, pp 1199-
1203

Abstract: Correlations between psychological data obtained from various tests
(MMPI, frustration method of Rozenzweig, Eysenck questionnaire, and others)
and biochemical data (blood tests for 11-hydroxycorticosteroids, serotonin,
protein-bound iodine; urine tests for dopamine, noradrenalin, adrenalin,
vanillylmandelic acid and others) were established. These relationships were
determined for 48 neurotics before applied stress, and for a control group of
healthy persons. The relationships were arrived at by the method of regres-
sion analysis using a computer.

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KARVASARSKIY, B. D., et al., Zhurnal Nevropatologii i Psikhiiatrii, 1971, Vol 71, No 8, pp 1199-1203

It is clear from the results that regression analysis is valuable in forecasting the effects of stress on neurotics, which in turn makes it potentially valuable in studying the pathogenesis and therapy of neuroses.

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USSR

KRAVCHENKO, V. I., TARABROV, V. V.

UDC 621.375.82

"The Possibility of Obtaining a Single-Frequency Generation Mode for Neodymium Glasses"

V sb. Peredacha energii v kondensirovan. sredakh (Energy Transfer in Condensed Media -- Collection of Works), Yerevan, 1970, pp 109-115 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D1060)

Translation: Single-frequency subpulse generation was obtained in a ring resonator with a dispersing prism. This design prevents the possibility of decomposition of the generation spectrum due to spectral inhomogeneity of the active medium and spatial inhomogeneity of the field in the resonator. If the width of the generation spectrum in a standing wave mode reaches $10-15 \text{ cm}^{-1}$ under a chaotic frequency from subpulse to subpulse, stable single-frequency generation is observed in the traveling wave mode. The spectra were recorded with a diffraction spectrograph (dispersion $5 \text{ cm}^{-1}/\text{mm}$) and a Fabry-Perot interferometer (dispersion 0.166 cm^{-1} , resolution 0.005 cm^{-1}). N. A. Ch.

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USSR

UDC: 621.373:530.145.6

KRAVCHENKO, V. I., TARABROV, V. V.

"On the Possibility of Achieving the Single-Frequency Mode of Emission in Neodymium Glasses"

V sb. Peredacha energii v kondensirovan. sredakh (Energy Transmission in Condensed Media--collection of works), Yerevan, 1970, pp 109-115 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D216)

Translation: The authors describe an experiment set up on the basis of a theoretical analysis showing that in order to achieve single-frequency emission, it is necessary to prevent the possibility of spectral splitting as a consequence of spectral nonuniformity of the active medium, and to eliminate the nonhomogeneity of the field of modes in the cavity. Emission of glasses activated by trivalent neodymium cation is realized in a prism type traveling wave cavity. A high-speed camera was used to study the time scans of intensity, spectrum and emission pattern in a remote field for forward and backward waves in the band of $9100-9600\text{ cm}^{-1}$. Stable single-frequency emission is achieved in the traveling-wave mode for all realizable pumpings. The energy yield of helium emission decreases with a transition to the traveling wave mode: the amplitude of spikes nearly doubles with no

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KRAVCHENKO, V. I., TARABROV, V. V., Peredacha energii v kondensirovan. sredakh,
Yerevan, 1970, pp 109-115

change in the total duration of emission or the number of spikes, which leads
to an appreciable increase in the integral spectral brightness. A. K.

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USSR

UDC 537.311.33:546.23'48

UST'YANOV, V.I., TARABROVA, L.I.

"Change Of Photoelectric Properties Of Cadmium Selenide With γ Irradiation"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic Crystals-
Collection Of Works), Vol 3, Part 2, Kiev, "Nauk.dumka," 1971, pp 78-91 (from
RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10659)

Translation: The change of the energy spectrum of the local levels in CdSe
after irradiation by γ -quantum of Co^{60} was investigated as well as the charact-
er of this change and its cause. Shallow and deep levels were studied. The
effect of γ radiation on the recombination processes in the crystal is establish-
ed. Certain parameters are determined of crystals subjected to irradiation.
5 ill. 10 ref. I.V.

1/1

USSR

VOLOSOV, D. S., SHPYAKIN, M. G., ~~TARABUKIN, V. V.~~, GRIGOR'YEVA, H. M.

UDC: 771.351.3

"A Fast Photo Lens"

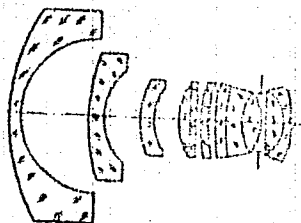
Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrantsy, Tovarnyye Znaki, No 6, Feb 72, Author's Certificate No 328408, Division G, filed 4 May 70, published 2 Feb 72, p 142

Translation: This Author's Certificate introduces: 1. A fast photo lens which contains four components, the first made up of two separate negative menisci with concavity facing the diaphragm, and the second made up of a double-cemented element and a separate element. As a distinguishing feature of the patent, correction of aberrations is improved with simultaneous reduction of the overall longitudinal size by equipping the first component with an additional negative meniscus with concavity facing the diaphragm, and by making the separate element of the second component in the form of a negative meniscus with concavity turned toward the diaphragm, and making the third component from cemented positive and negative menisci and a biconvex lens with a power that is 1.5 and 1.6 times that of the positive and negative meniscus respectively. The fourth component is cemented up from a positive and a negative meniscus with powers of the same order and a difference in the coefficients of refraction of at least 0.19 and

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USSR

VOLOSOV, D. S. et al., USSR Author's Certificate No 328408
a dispersion coefficient ratio of at least 2.2. 2. A modification of this lens distinguished by the fact that a field of view of at least 90° is achieved in a liquid by making the separate and double-cemented elements of the second component as a single unit.



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USSR

KORNEYCHUK, V. I., TARACHENKO, V. P., TESLENKO, A. K.

"Synthesis of Combination Circuits in One Class of Multivalued Algebras"

Avtomatika i Vychisl. Tekhn. [Automation and Computer Technology], 1972, No 5, p 9-13 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V449, by G. Gavrilov).

Translation: A full system of functions in k-valued logic is studied, consisting of $\max(x, y)$, $\min(x, y)$ and m functions $\phi_j(x)$ ($1 \leq j \leq m$), among which there are k functions

$$\phi_s(x) = \begin{cases} k-1 & \text{where } x=s, \\ 0 & \text{where } x \neq s, \end{cases}$$

$s = 0, 1, \dots, k-1$. The authors have found that the set of functions $\{\phi_j(x)\}$ should include constants and identity functions (i.e., functions corresponding with the variables), since their realization does not require special logic elements, while their inclusion expands the capabilities for minimization of functions. Problems of synthesis and minimization of circuits in this system

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USSR

Korneychuk, V. I., Tarachenko, V. P., Teslenko, A. K., *Avtomatika i Vychisl. Tekhn.*, 1972, No 5, pp 9-13.

of functions are studied. In the first stage of synthesis of a combination circuit, a representation of the function (which must be realized by the circuit) is selected in the form of a certain superposition of functions included in the initial system. It is stated that the most convenient and natural representation is the so-called canonical form

$$f(\bar{x}) = \max_{\bar{\sigma}} (\min (f(\bar{\sigma}), I_{\sigma_1}(x_1), I_{\sigma_2}(x_2), \dots, I_{\sigma_n}(x_n))),$$

where $\bar{x} = (x_1, x_2, \dots, x_n)$, $\bar{\sigma} = (\sigma_1, \sigma_2, \dots, \sigma_n)$, $\sigma_i \in E_k = \{0, 1, \dots, k-1\}$ and the maximum is taken with respect to all sets $\bar{\sigma}$ of values of variables $x_1, x_2, \dots, x_n$. The next stage in synthesis of a combination circuit consists of minimization of the canonical form of the function studied. Here, the operations of incomplete attachment and absorption are introduced, the application of which to canonical form of the function yields a certain analogue of the reduced dnf. The criterion of incomplete attachment is formulated and proven for this system without clarification of the form of functions $\phi_j(x)$.

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USSR

Korneychuk, V. I., Tarachenko, V. P., Teslenko, A. K., *Avtomatika i Vychisl. Tekhn.*, 1972, No 5, pp 9-13.

At the same time, the authors note that the criterion of absorption should be established on the basis of the specific assignment of the set of functions $\{\phi_j(x)\}$. Further, synthesis of combination circuits is studied in the so-called expanded algebra of Post (terminology of the authors), including the constants $0, 1, \dots, k-1$, and the functions $\max(x, y)$, $\min(x, y)$, $l_s(x)$ ($0 \leq s \leq k-1$) and $\max(\alpha_1, x + \alpha_1, \dots, x + \alpha_q) + \beta$ (here the sum is taken with respect to mod k), $0 \leq \alpha_1 < \dots < \alpha_q \leq k-1$, $\beta \in \{0, 1\}$, $0 \leq q \leq k-1$.

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USSR

UDC: 534.2

OBOZHENKO, I. L. and TARADANOV, L. Ya.

"Time Characteristics of Signals Reflected From an Infinite Circular Cylinder and a Sphere"

Vestn. Kiyev. politekhn. in-ta. Ser. radiotekhn. i elektroakust.
(Herald of the Kiev Polytechnical Institute, Radio Engineering and Electroacoustics Series) No 9, 1972, pp 151-153 (from RZh--Fizika, No 9, 1972, Abstract No 9Zh508)

Translation: Computations are made of the time characteristics of signals reflected from an infinite circular cylinder and a sphere on which are incident pulse signals with monochromatic filling [sic]. The computations are made in the Kirchhoff approximation. An inverse Fourier transform is used. Author's abstract.

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USSR

Refractory Materials

UDC: 666.763.4

IVANOV, Ye. V., DOLGINA, G. Z., BUNINA, V. P., ABBAKUMOV, V. G., TARAKANCHIKOV, G. A. Ukrainian Scientific-Research Institute of Refractories, All-Union Institute of Refractories
"Production of Magnesium Oxide From Sea Water and Dolomites"

Moscow, Ogneupory, No 12, 1973, pp 25-30.

Abstract: A technological process has been developed for the production of synthetic magnesium oxide (97% MgO) by a hydrate plan from Black Sea water and dolomites. The two-stage process of treatment of magnesium hydroxide paste produced from the sea water and dolomites, consisting of drying-briquetting-roasting or dehydration-briquetting-roasting, produces dense powders for the production of refractory products. A number of steps have been taken to assure achievement of high roasting temperatures of briquettes in the 22-meter-long rotating furnace, allowing the fraction of primary air to be regulated and its mixing with the fuel to be improved. Roasting is performed at maximum temperatures of 1750-1770° C, with the quantity of primary air injected reaching 62% of the theoretically necessary quantity.

1/1

1/2 010
UNCLASSIFIED
TITLE--CORRELATION OF THE LENGTHS OF THE ZONES OF HIGH TEMPERATURE TUNNEL
KILNS -U-
AUTHOR-(03)-SHUMILIN, A.A., ABBAKUMOV, V.G., TARAKANCHIKOV, G.A.
COUNTRY OF INFO--USSR
SOURCE--OGNEUPORY 1970, 35(3), 8-15
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--INDUSTRIAL FURNACE, REFRACTORY MATERIAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0894
CIRC ACCESSION NO--AP0118063
STEP NO--UR/0131/70/035/003/0008/0015
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118063

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE HITHERTO USED LENGTHS OF THE PREHEAT, FIRING, AND COOLING ZONES OF TUNNEL KILNS FOR FIRING MAGNESITE PRODUCTS ARE NOT OPTIMUM. IMPROVEMENT OF THE EFFICIENCY OF FURNACES IS POSSIBLE BY CHANGING LENGTHS OF ZONES. THE PREHEAT ZONE CAN BE SHORTENED BECAUSE ONE CAN ACCELERATE THE HEATING OF THE MAGNESITE PRODUCTS IN THIS ZONE DEPENDING ON THE HEAT TRANSFER AND PRODUCT CHARGING RATES. ON SHORTENING THE PREHEATING ZONE, THE COOLING ZONE CAN BE EXTENDED.

FACILITY: VSES. INST. OGNEUPOR., LENINGRAD, USSR.

UNCLASSIFIED

USSR

SHUMILIN, A. A., ABBAKUMOV, V. G., ~~TARAKANCHIKOV, G. A.~~

"The Problem of the Relationship of Zone Lengths in a High-Temperature Tunnel Furnace"

Moscow, Ogneupory, No 3, Mar 70, pp 8-15

Abstract: The relationship of heating, roasting, and cooling zone lengths in existing high-temperature tunnel furnaces for roasting of magnesium products is not optimal. This creates reserves for the improvement of the operation of the furnace, by optimization of the relationship of zone lengths. The heating zone in a high-temperature tunnel furnace generally completes the heat exchange process and then includes some additional length. This zone can be shortened without any damage to the operation of the furnace, allowing an increase in the cooling zone length.

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- 50 -

USSR

TARAKANOV, K. V.

UDC: 8.74

"General Principles and Structure of Software for Automated Control Systems"

V sb. Tsifr. vychisl. tekhnika i programmir. (Digital Computer Technology and Programming--collection of works), vyp. 7, Moscow, "Sov. radio", 1972, pp 23-29 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V636)

Translation: The paper outlines certain principles which should be adhered to in developing special software for automated control systems. Satisfaction of these principles creates conditions for more successful development of a program complex with less labor expenditure and in a shorter time. Consideration is given to development of automated information systems, and in particular to the need for creating basic information systems as bases for all special software. Author's abstract.

1/1

- 65 -

USSR

UDC: 681.3.06:51

TARAKANOV, K. V., POLURENKO, N. P.

"General Structure of Formation of the Right-Hand Members of a Certain Class of Systems of Differential Equations With the Aid of a Digital Computer"

V sb. Tsifr. vychisl. tekhnika i programmir. (Digital Computer Technology and Programming--collection of works), vyp. 6, Moscow, "Sov. radio", 1971, pp 61-68 (from RZh-Kibernetika, No 7, Jul 71, Abstract No TV728)

Translation: A method is outlined for programmed formation of the right members of systems of Markovian differential equations according to mnemonic rules. The differential equations describe functioning of certain complex systems. Formation of the right members of the equations is a prerequisite for computer sorting of all possible states of the complex system. As a result of sorting of the states of the complex system, information is obtained which uniquely defines the right-hand members of the differential equations. The principle of positional storage of information with a variable step is used, which together with the principle of computer compilation of right-hand members ensures integration of a comparatively large number of differential equations. Authors' abstract.

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- 64 -

USSR

UDC 669.187

TARAKANOV, L. A., and LYAKISHEV, N. P.

"Cathode Ray Remelting of Nickel-Niobium Master Alloy"

Proisvodstvo Chernykh Metallov (Production of Ferrous Metals -- Collection of Works), No 75, Metallurgiya Press, 1970, pp 158-161

Translation: Results are presented from an experimental work involving refining of nickel-niobium master alloys using remelting in a cathode ray furnace. It is established that the content of lead, tin, and copper in the nickel-niobium master alloy produced from niobium concentrate after cathode ray remelting is equal to or lower than that in a master alloy produced from niobium pentoxide, a more expensive raw material. 3 tables.

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USSR

UDC 669.187

POPOV, YU. A., BOCHKOV, YU. M., and TARAKANOV, L. A.

"Evaporation of Manganese, Nickel, and Iron by Cathode Ray Remelting of Iron-Nickel Alloy"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 155-158

Translation: The rates of evaporation of iron and nickel during cathode ray remelting of iron-nickel alloy are calculated. Experimental and calculated data are compared. The relationship of concentrations of iron and nickel in the surface layer during cathode ray remelting is determined. Data are presented on the evaporation of manganese, and on its distribution through the cross section of the ingot as a function of melting rate. 2 figures; 2 tables; 2 biblioc. refs.

1/1

- 18 -

USSR

UDC 669.187

TARAKANOV, L. A., KAZAKOV, V. I., SVISTUNOVA, T. V., and BOYARSHINOV, V. A.

"Cathode Ray Remelting of EP496 and EP 567 Corrosion-Resistant Alloys"

Proizvodstvo Chernykh Metallov (Production of Ferrous Metals - Collection of Works), No 75, Metallurgiya Press, 1970, pp 148-155

Translation: Cathode ray remelting of EP496 and EP567 corrosion-resistant alloys provides a high degree of refining of oxygen, nitrogen, and carbon. The increased purity provides better resistance in chemically aggressive media. Due to the lower separation of excess phases along grain boundaries, the resistance to intercrystalline corrosion is particularly high. 9 figures; 3 tables; 1 biblio. ref.

1/1

USSR

UDC 669.187

TARAKANOV, L. A., KAZAKOV, V. I., SVISTUNOVA, T. V., and BOYARSHINOV, V. A.

"Cathode Ray Remelting of EP496 and EP 567 Corrosion-Resistant Alloys"

Proizvodstvo Chernykh Metallov (Production of Ferrous Metals - Collection of Works), No 75, Metallurgiya Press, 1970, pp 148-155

Translation: Cathode ray remelting of EP496 and EP567 corrosion-resistant alloys provides a high degree of refining of oxygen, nitrogen, and carbon. The increased purity provides better resistance in chemically aggressive media. Due to the lower separation of excess phases along grain boundaries, the resistance to intercrystalline corrosion is particularly high. 9 figures; 3 tables; 1 biblio. ref.

1/1

USSR

TARAKHANOV, D. F., KOBZINIDZE, M. G., MORDEL', G. I., et al.

"Rodenticidal Compsition"

USSR Author's Certifictae No 363474, filed 23 Jun 71, published 24 Jan 73
(from RZh-Khimiya, No 21, Nov 73, Abstract No 21N531P)

Translation: The following are added to the rodenticide in order to increase its effectiveness by stabilizing the foam: stearine as the structure forming agent, glycerine as a foam stabilizer, and a propellant. Example. Rodenticidal preparation contains (in %): technical phentolacin 0.2-3.0, triethanolamine 1-10, sp 0.1-3, glycerine 10-30 stearine 1.5-5, freon 12.5-25, water up to 100.

UDC 621.438.001.5

USSR

KOCHUROV, V. I., Candidate of Technical Sciences, TARAKANOV, N. I., SARANISEV, Engineers, VLASENKO, I. V., Candidate of Technical Sciences

"Experimental Dynamic Characteristics of the GTK-10 NZL Gas Turbine"

Leningrad, Energomashinostroyeniye, No 2, February 1970, pp 1-3

Abstract: This article contains the results of experimental investigations to determine the dynamic characteristics of an open cycle gas turbine engine with a free power turbine and regeneration of the exhaust gas heat. The experimental phase-amplitude characteristics of the GTK-10 which were obtained offer the possibility of refining the procedure for calculating the dynamic characteristics of the gas turbine engine and determining the effect of various factors on the dynamic characteristics of such engines. The engine in question has a rated power of 10,000 kilowatts and rotot rpm's of 5,350 for the high pressure turbine axial compressor and 4,800 for the low pressure turbine blower. The experimental tests were run with the engine operating on a closed blower loop which permitted determination of the dynamic characteristics of the turbine engine in a broad load range. The characteristics of the unit are both tabulated and plotted on graphs.

The experimental determinations of the dynamic characteristics of the gas

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USSR

KOCHUROV, V. I., et al, Energomashinostroyeniye, No 2, February 1970, pp 1-3

turbine engine showed that it is not possible to determine the frequency characteristics of the object of regulation jointly with the regulation system included in connection with the fact that when the unit operates with an rpm regulator there are aperiodic oscillations of the fuel regulation valve. The magnitude of the amplitude of these oscillations is commensurate with the amplitude of the forced oscillations of the valve. Therefore it is expedient to investigate the dynamic characteristics of the regulating system and the gas turbine engine separately. It is pointed out that the data gathered during these investigations can be used when designing automatic regulating and control systems for new gas turbine engines. It is also pointed out that investigation of the phase-amplitude characteristics determined for various values of the input perturbation amplitude under the same operating conditions shows that the frequency characteristics of GTK-10 depend insignificantly on the amplitude of the perturbation in the range of variation of the amplitude $A_n = 0.158-0.944$ mm on the given frequency.

2/2

- END -

USSR

UDC 621.438-531

KOCHYROV, V. I., and TARAKANOV, N. I.

"Investigation of Dynamic Properties of Twin-Shaft Gas Turbine Units of Open Cycle With Heat Regeneration"

V Sb. "Dinamika Teplov. Protsessov v Energetike i Tekhnol." [In the Collection "Dynamics of Thermal Processes in Power Engineering and Technology], Kiev, "Nauk. Dumka", 1971, pp 45-61 (from Referativnyy Zhurnal, No 6, Jun 72. 49. Turbostroyeniye. Abstract No 6.49.132)

Translation: The dynamic properties of two gas turbine units (GT-750-6 and GTK-10 NZL) were investigated by the experimental-analytical method in the Central Scientific Research Planning and Design Boiler and Turbine Institute imeni I. I. Polzunov (TsKTI). The method combined the experimental investigation of the dynamics of the unit with the analysis of equations of its individual parts. The experimental work carried out in common by the TsKTI and the NZL (Neva Machinery Plant imeni V. I. Lenin) was accomplished by the frequency method and the method of intermittent perturbations by the fuel adjusting valve under conditions close to operation. The investigation results of aerodynamic characteristics of the turbine-compressor block GTU-GTK-10 are presented. Eight illustr., two biblio. refs.
1/1

1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--THERMOMECHANICAL METHOD FOR CONTROLLING THE HEAT STABILITY OF LIGHT
CELLULAR PLASTICS -U-
AUTHOR-(02)-DEMENTYEV, A.G., TARAKANOV, O.G.
COUNTRY OF INFO--USSR
SOURCE--PLAST. MASSY 1970, (6), 68-9
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--FOAM PLASTIC, POLYURETHANE RESIN, POLYVINYL CHLORIDE,
DILATOMETRIC ANALYSIS, THERMAL STABILITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/0707 STEP NO--UR/0191/70/000/006/0068/0069
CIRC ACCESSION NO--AP0136146
UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0136146
ABSTRACT/EXTRACT--(U) GP-Q- ABSTRACT. THE DEFORMATION VS. TEMP. CURVES
WERE OBTAIN UNDER CONST. STRESSES FOR LOW D. (SIMILAR TO 0.05 G-CM
PRIME3) FOAMED POLYURETHANE OR SEMIRIGID POLY(VINYL CHLORIDE). IT WAS
NOT POSSIBLE TO DET. THE GLASS POINT (T SUBG) OR THE SOFTENING POINT (T
SUBS) OF THESE FOAMS. THE ALTERNATIVE DILATOMETRIC METHOD MAY BE USED
FOR T SUBG AND T SUBS DETN. OF THE LIGHT OPEN CELL FOAMS, BUT NOT OF THE
CLOSED CELL FOAMS. THE THERMAL STABILITY OF THESE FOAMS CANNOT BE
JUDGED FROM THE DEFORMATION VS. TEMP. CURVES.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--REACTIVITY OF CELLULOSE. II. EFFECT OF CELLULOSE DEHYDRATION
CONDITIONS ON THE REACTIVITY OF CELLULOSE DURING ACETYLATION -U-
AUTHOR-(C3)-KOZLOV, N.A., MEDVED, Z.N., TARAKANOV, O.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 940-3

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CELLULOSE, NATURAL FIBER, DEHYDRATION, HYDROGEN BONDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3008/1498

STEP NO--UR/0080/70/043/004/0940/0943

CIRC ACCESSION NO--AP0138499

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--APC138499

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ACETYLATION RATE CONSTS. (K) OF VARIOUS COTTON CELLULOSE (I) SAMPLES OBTAINED BY SCOURING, CHLORINATION, ALK. TREATMENT, HYPOCHLORITE BLEACHING, PEROXIDE BLEACHING, OR ACID TREATMENT WERE OBTAINED. THERE IS SOME CORRESPONDENCE BETWEEN THE SP. SURFACE OF I AND K; HOWEVER, THE MAIN FACTOR IN K DETN. IS THE RELATION BETWEEN THE INTER AND INTRAMOL. H-BONDING.

UNCLASSIFIED

USSR

UDC: 541.124/128

ALEKSANDROVA, YU. V., and TARAKANOV, O. G.

"Investigation of the Influence of Sulfuric Acid on the Kinetics of the Alcohol-Isocyanate Reaction"

Tr. po khimii i khim. tekhnol. (Gorkiy) (Works on Chem. and Chem Technol. (Gorkiy)) No 3(21), pp 89-95, 1968 (from Referativnyi Zhurnal Khimii, No 2, 25 Jan 70, Abstract No 2 B953)

Translation: It was shown that sulfuric acid catalyzes the reaction of phenyl isocyanate with butyl alcohol. The reaction is of first order relative to each reagent and the catalyst. The catalytic rate constant, calculated from kinetic data at acid concentrations between 0 and 2.5 mol/ in dibutyl ester, is 0.84 $\text{mol}^{-2} \cdot \text{min}^{-1}$. In the presence of the catalyst, the activation energy of the reaction drops from 11.5 to 6.3 kcal/mol. A catalysis mechanism is suggested, according to which a complex is formed between the isocyanate and an acid molecule, which then reacts with the alcohol to form urethane.

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R. P. Tiger

USSR

UDC 621.438.531

KOCHUROV, V.I., and TARAKANOV, V.I.

"Investigation of Dynamic Characteristics of the Parts of a Twin-Shaft Gas Turbine Unit"

V Sb. "Dinamika Teplov. Protsessov v Energetike i Tekhnol" [In the Collection "Dynamics of Thermal Processes in Power Engineering and Technology", Kiev, "Nauk. Dumka", 1971, pp 31-45 (from Referativnyy Zhurnal, No 6, Jun 72. 49. Turbostroyeniye. Abstract No 6.49.1317]

Translation: Investigations of dynamic properties of gas turbine units as controlled members are conducted in the Central Scientific Research Planning and Design Boiler and Turbine Institute imeni I. I. Polzunov. Experimental-analytical investigation of dynamic characteristics of parts of a twin-shaft gas turbine unit was begun in the Division of Automation in the year 1966. In this task, a comparative analysis of analytically determined dynamic characteristics was carried out on the basis of obtained experimental frequency characteristics of the unit. The dynamic properties of the gas turbine unit were experimentally investigated on a header sample of the GT-750-6 gas turbine unit of the Neva Machinery Plant imeni V.I. Lenin type. The experimentally derived dynamic characteristics make possible an evaluation of various models of gas turbine parts; they can be used for a more exact definition of the calculation method of the dynamics of a gas turbine unit. Five illustr., two biblio. refs.

USSR

UDC: 621.384.6.01

BOGDANKEVICH, L. S., RUKHADZE, A. A., and TARAKANOV, V. P.

"Limiting Currents in Electron Beams With Relativistic Energy Dispersal"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 4, 1972, pp 900-901

Abstract: The problem of limiting currents and the stability of a compensated electron beam with relativistic energy dispersal of the particles in a strong longitudinal magnetic field inside a cylindrical drift space is investigated in this brief communication. The condition for this analysis is $T \gg mc^2$, where T is the effective temperature characterizing the energy dispersal of the beam, m is the mass of the particle, and c is the velocity of light. In two earlier papers (ZhETF, 57, 1969, p 331; UFN, 103, 1971, p 609) the first two authors named above proposed a general method for determining the limiting current based on the condition of electrostatic instability in the beam. However, since heavy-current electron beams in accelerators may have large energy variations, the authors used the approach of the present communication. They thus conclude that the value of the limiting current increases in comparison with the single-energy beam by T/mc^2 times. They are associated with the P. N. Lebedev Physics Institute in Moscow.

1/1

USSR

UDC 621.646.2

MASLENNIKOV, G. P., KRASIL'NIKOV, G. V., TARAKANOV, Ye. V., and SOKOLOV, A. D.,
Technological and Scientific Research Institute of Planning, Ministry of the
Motor Vehicle Industry of the USSR

"A Programmed Control Device"

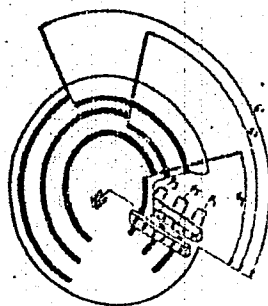
Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 22, Aug 71, Author's Certificate No 309355, Division G, filed 1 Sep 69,
published 9 July 71, p 186

Translation: This Author's Certificate introduces a programmed control device
for test stands. The device contains a program cycle input controller, a
comparison module, a parameter data unit, and a parameter regulator. As a
distinguishing feature of the patent, the design is simplified by making the
comparison module in the form of a disc with open slots mounted on the axle
of the parameter data unit. Each pair of slots is displaced by an angle
corresponding to the predetermined value of the parameter. The disc is
located between supply and reception nozzles, the first being connected in
pairs to the outputs of the program cycle input controller, while the second
are connected to the parameter regulator.

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USSR

MASLENNIKOV, G. P., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 22, Aug 71, Author's Certificate No 309355, Division G, filed 1 Sep 69, published 9 July 71, p 186



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USSR

UDC 669.187.083.4.069.8

TARAKANOV, Yu. V., LINCHEVSKIY, B. V., Moscow Evening Metallurgical Institute

"Degasifying Melts in a Vacuum"

Moscow, IVUZ. Chernaya Metallurgiya, No 5, 1972, pp 46-50

Abstract: The authors study degasification of melts in a vacuum under dead melt conditions. The experimental melts were made in a TVV-4 resistance furnace with tungsten heater. An investigation was made of the effect of temperature and pressure on the rate of elimination of hydrogen from alloys of iron with 18.5% chromium, iron with 18.5% chromium and 11.7% nickel, and pure nickel. It is found that degasification of metal in a vacuum is limited by diffusion of hydrogen atoms through the incompletely mixed surface layer of the metal. The coefficients of mass exchange D/δ for Fe-Cr and Fe-Cr-Ni alloys and pure nickel are $0.96 \cdot 10^{-2}$, $1.45 \cdot 10^{-2}$ and $1.52 \cdot 10^{-2}$ cm/s respectively at 1600°C. The degasification process is accelerated by increasing the temperature and reducing the pressure above the melt.

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USSR

UDC 669.24.053.27

LINCHEVSKIY, B. V., TARAKANOV, Yu. V., SOBOLEVSKIY, A. I.

"Deoxidation of Nickel During Vacuum Smelting"

Sb. tr. Mosk. Vech. Metallurg. In-t. [Collected Works of Moscow Evening Metallurgical Institute], No 13, 1971, pp 169-174, (Translated from Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G390 by the authors)

Translation: Possible means are studied for removal of O during melting of Ni in a vacuum. It is demonstrated by thermodynamic regularities that the holding of liquid Ni at <6.3 mm hg pressure should result in removal of O. Experimental melts were performed in a resistance furnace at 10^{-2} , 10^{-3} , 10^{-4} mm hg at 1,550, 1,600, and 1,650°. The removal of O from Ni follows a first order kinetic equation, corresponding to a diffusion-adsorption mechanism for the process. Based on the results produced, an approximate diffusion factor of O and liquid Ni is calculated at 1,600° as $1.04 \cdot 10^{-11}$ cm/sec. Deoxidation of Ni in a vacuum using C is considerably more rapid than removal of O without the deoxidizers. 2 Figures; 2 Tables; 9 Biblio. Refs.

1/1

USSR

UDC: 534.142

TARAKANOVSKIY, A. A., SHTEYNBERG, V. B., Leningrad Polytechnical Institute
imeni M. I. Kalinin

"Excitation of Acoustic Oscillations in a Tube With Double Rieke Grid"

Moscow, Akusticheskiy Zhurnal, Vol 18, No 2, Apr-Jun 72, pp 299-304

Abstract: Research on excitation of vibrations in a Rieke tube has shown that when the heated grid is located under a second fine grid which does not contain a source of heat, and when gas flow is directed upward, excitation of the fundamental tone causes two regions of excitation to appear in the lower half of the tube at separate Strouhal numbers, with an additional region of excitation at an intermediate Strouhal number in the upper half of the tube. The authors present experimental data which show that such regions of excitation arise periodically as the auxiliary grid is moved away from the main grid. A theory is presented which gives a qualitative description of the observed effect, which is attributed to entropy waves following the main grid and influencing heat exchange with the auxiliary grid.

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- 2 -

USSR

UDC 612.62

TARAKHOVS'KIY, M. L., SAMBROSKA, E. P., MEDVEDEV, B. M., ZADOROZHNA, T. D.,
OKHRONCHUK, B. V., and LIKHTENSHTEYN, Ye. M., Experimental Department, Kiev
Institute of Pediatrics, Obstetrics and Gynecology, and Physiology Labora-
tory, All Union Institute of Hygiene and Toxicology of Pesticides and
Plastics

"The Effect of Permanent and Alternating Magnetic Fields on Some Physiolog-
ical Functions and Metabolic Processes in White Rats"

Kiev, Fiziologicheskii Zhurnal, No 4, 1971, pp 452-459

Abstract: Exposure of rats for one month to permanent and alternating
magnetic fields (130 to 140 cersteds) significantly altered ovarian func-
tion, blood proteins, hemoglobin, erythrocytes, and hematocrit index.
Morphological changes in the ovaries, liver, and adrenal glands were more
pronounced after the action of the alternating magnetic field. Other
quantitative and qualitative changes suggest that the mechanism of action
of the two types of magnetic fields differs.

1/1

- 24 -

UNCLASSIFIED
TITLE--SIGNIFICANCE OF SULFHYDRYL GROUPS OF N CHOLINGRECEPTORS IN THE
MECHANISM OF ACTION OF PROSERINE -U-
AUTHOR--TARAKHOVSKIY, M.L.
COUNTRY OF INFO--USSR
SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
NR 4, PP 72-75
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--SULFUR COMPOUND, REPRODUCTIVE SYSTEM, ACETYLCHOLINE, DIGESTIVE
SYSTEM, BARIUM COMPOUND, CHLORIDE, GANGLION, CHOLINOLYTIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/1581
CIRC ACCESSION NO--AP0106327
STEP NO--UR/0219/70/069/004/0072/0075
UNCLASSIFIED

2/2 020
CIRC ACCESSION NO--AP0106327 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT THE BACKGROUND OF THE BLOCK OF
SULFHYDRYL GROUPS, THE CONTRACTION RESPONSE OF THE INTESTINE AND UTERUS
TO PROSERINE IS INHIBITED, WHILE THE RESPONSE TO ACETYLCHOLINE AND
BARIUM CHLORIDE IS PRESERVED. THE REPRESSION OF SH GROUPS OF THE
INTESTINE AND UTERUS RESULTS IN DISAPPEARANCE OF THE STIMULATING EFFECT
OF N CHOLINOMIMETIC DMPP. A SIMILAR RESPONSE TO DMPP AND PROSERINE
OCCURS AT THE BACKGROUND OF THE BLOCK OF GANGLIA. THE DATA OBTAINED
INDICATE THE IMPORTANCE OF SULFHYDRYL GROUPS OF THE GANGLIONAR N
CHOLINORECEPTORS IN THE MECHANISM OF STIMULATING ACTION OF PROSERINE ON
THE INTESTINE AND UTERUS.

PROCESSING DATE--02OCT70

UNCLASSIFIED

USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SEMENOV, D. I., SUKHACHEVA, Ye. I., MENOSHIKOVA, G. A.,
BELOVA, M. N., TARAKHTLY, F.

"Accessibility of Radioactive Cerium for Extraction From an Organism by
Diethylenetriaminepentaacetic Acid. Relationship Between the Quantity
Extracted and That Contained in the Organism"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the
Institute of Animal and Plant Ecology. Ural Affiliate, Academy of Sciences
of the USSR), 1970, vyp. 68, pp 81-86 (from RZh-Biologicheskaya Khimiya,
No 23, 10 Dec 70, Abstract No 23F2204)

Translation: The amount of cerium-144 extracted by the complexing agent in
the daily urine of rats amounts to $\frac{1}{10}$ of the quantity of the isotope con-
tained in all soft tissues (the cerium in the skeleton does not participate
in this process). This is the actual ratio for various periods after using
the complexing agent (from the 8-th to the 126-th day of the experiment) in
a dose of 100 μ moles in a rat. Repeated injection of the complexing agent
does not change this ratio when the cerium extracted with the first injec-
tion is taken into account. From the authors' resumé.

1/1

1/2 007
UNCLASSIFIED
PROCESSING DATE--13NOV70
TITLE--HEAT FROM DEPTH AT THE BIBIEYAT OIL AND GAS FIELD - -
AUTHOR--(03)-SUKHAREV, G.M., TARAKHUNA, YU.K., VLASOVA, S.I.
COUNTRY OF INFO--USSR
SOURCE--AKAD. NAUK SSSR DOKLADY, V. 190, NO. 1, P. 176-179, ILLUS., TABLE,
1970
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS
TOPIC TAGS--GEOGRAPHIC LOCATION, NATURAL GAS, CRUDE OIL, PETROLEUM
DEPOSIT, GEOGRAPHIC LOCATION, GEOTHERMAL GRADIENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/2006
CIRC ACCESSION NO--AT013384
STEP NO--UR/0020/70/190/001/0176/0179
UNCLASSIFIED

2/2 007

CIRC ACCESSION NO--AT0133841

UNCLASSIFIED

PROCESSING DATE--13NOV76

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF GEOTHERMAL MEASUREMENTS IN 15 WELLS IN DIFFERENT PARTS OF THE BIBIYAT OIL AND GAS FIELD (SOUTHWEST COAST OF THE APSHERON PENINSULA) ARE TABULATED. AVERAGE GEOTHERMAL GRADIENTS RANGE FROM 0.0266 DEGREES TO 0.434 DEGREES PER METER. HEAT FLOW IS HIGHEST IN THE CREST OF THE STRUCTURE, AS EXPECTED, AND IS PARTICULARLY INTENSIVE IN THE VICINITY OF THE MUD VOLCANO. THESE RESULTS SUPPORT AN EARLIER CONCLUSION (1965) THAT IT MIGHT BE POSSIBLE TO PROSPECT FOR STRUCTURES AND FAULTS BY INVESTIGATING HEAT FLOW EVEN IN RELATIVELY SHALLOW WELLS.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--2300170

TITLE--EFFECT OF WATER ON THE MOLE STABILITY OF RIGID POLYURETHANE FOAMS

-U-

AUTHOR--(03)--DEMENTYEV, A.G., NEVSKIY, L.V., TARAKONOV, O.G.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (2), 51-2

DATE PUBLISHED-----70

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UNCLASSIFIED

2/2 018

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PROCESSING DATE--23OCT70

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ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE EFFECTS OF H SUB2 O ON THE SHPAE STABILITY OF RIGID POLYURETHANE FOAMS (PPU-3 (I) AND PPU-3S (II)) BLOWN WITH FREON-11 OR CO SUB2 WERE STUDIED. INITIALLY, H SUB2 O WAS ABSORBED AT THE SAME RATE BY BOTH I AND II. THE SOFTENING TEMP. OF II DECREASED BY 47DEGREES FOLLOWING ITS PLASTICIZATION WITH H SUB2 O DURING 5 DAYS. THE 2ND STAGE OF H SUB2 O ABSORPTION IN I OCCURRED AT A SLOWER RATE. THE SHAPE STABILITY OF I AND II WAS PROPORTIONAL TO THEIR RIGIDITY. THE EFFECTS OF POROSITY AND OF THE FOAMING GAS ON THE SHAPE STABILITY OF I AND II WERE DISCUSSED.

UNCLASSIFIED

UNCLASSIFIED
FILE--SHIFTS IN THE CONTENT OF THE BLOOD TRACE ELEMENTS IN PATIENTS WITH
ANGINA PECTORIS AND MYOCARDIAL INFARCTION AT DIFFERENT PERIODS OF THE
AUTHOR--(02)--RAFALOVICH, M.B., TARALA, G.T.
PROCESSING DATE--16OCT70
COUNTRY OF INFO--USSR
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2/2 025

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0108762

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS MADE A DYNAMIC STUDY OF THE CONTENT OF A NUMBER OF TRACE ELEMENTS (ZINC, COPPER, NICKEL, MAGNESIUM, LEAD, SILVER) IN THE ERYTHROCYTES, PLASMA AND WHOLE BLOOD IN 42 PATIENTS WITH ANGINA PECTORIS DURING A PAIN PAROXYSM AND AFTER IT, AND IN 39 PATIENTS WITH MYOCARDIAL INFARCTION DURING THE FIRST DAYS AND IN 1, 3, 6 AND 8 WEEKS FROM THE ONSET OF THE DISEASE. IT WAS REVEALED THAT INPATIENTS WITH ANGINA PECTORIS DURING A PAIN PAROXYSM THE LEVEL OF SOME MICROELEMENTS STATISTICALLY SIGNIFICANTLY CHANGED. THE AMOUNT OF ZINC, COPPER, MAGNESIUM, NICKEL AND SILVER INCREASE IN THE PLASMA AND COPPER, MAGNESIUM AND SILVER, IN ERYTHROCYTES, AND COPPER, NICKEL, MAGNESIUM, LEAD AND SILVER, IN THE WHOLE BLOOD. AFTER RECUPURATION OF THE PAROXYSM OF ANGINA PECTORIS THE CONTENT OF TRACE ELEMENTS BECOMES NORMALIZED, EXCEPT FOR MAGNESIUM AND COPPER. THE AUTHORS FOUND THAT CHANGES IN THE CONTENT OF TRACE ELEMENTS IN MYOCARDIAL INFARCTION BEGIN TAKING PLACE ALREADY ON THE FIRST DAY OF THE DISEASE AND MANIFEST THEMSELVES IN AN INCREASE OF THE LEVEL OF COPPER, MAGNESIUM IN THE ERYTHROCYTES, PLASMA AND THE WHOLE BLOOD, AND NICKEL, IN THE ERYTHROCYTES AND THE WHOLE BLOOD, AND A DROP IN THE LEVEL OF ZINC, SILVER AND LEAD IN THE PLASMA. THE MOST MARKED SHIFTS CAN BE OBSERVED IN THE ACUTE PERIOD OF MYOCARDIAL INFARCTION. BY THE END OF CICATRIZATION PERIOD THE CONTENT OF TRACE ELEMENTS IN THE BLOOD BECOMES GRADUALLY NORMALIZED.

FACILITY: KAFEDRA FAKUL'TETSKUY TERAPII STRAVROPOL'SKOGO MED. INST.

UNCLASSIFIED

USSR

UDC 621.371.823:621.317.743.4

OGORODNEYCHUK, I. F., VERESHCHAGIN, G. P., TARAN, A. I.

"Studying the Effect of the Traction Lines of a High-Frequency Electric Locomotive on Communication Lines Used in Mines"

Pribory i sistemy avtomatiki. Resp. mezhved. nauchnotekhn. sb.
(Instruments and Systems of Automation. Republic Inter Higher Educational Institutional Scientific-Technical Collected Works), 1969, Vol 9, pp 71-76 (from RZh-Radiotekhnika, No 4, 1970, Abstract No 4A285)

Translation: Interference produced by the traction lines for high-frequency electric locomotives in mine communication lines is conditioned by the coincidence of the operating frequency of the high-frequency electric locomotive and the transmitted frequency spectrum of the telephone signal, by the significant magnitude of the linear current of the high-frequency electric locomotive traction cables, and by the parallel path of traction lines and communication cables at a distance from each other of

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USSR

OGORODNEYCHUK, I. F., et al. Pribory i sistemy avtomatiki. Resp. mezhved. nauchnotekhn. so., 1969, Vol. 9, pp 72-76

0.6 - 1.0 m. A theoretical analysis and approximate calculations on the interference effect of lines of traction shows that the basic role is played by the magnetic effect. A relatively great portion of the resulting interference is due to the magnetic component which is determined by the electric asymmetry of the communication circuit with respect to the earth. L.K.

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- 11 -

Acc. Nr:

470046313

Abstracting Service: 5170
INTERNAT. AEROSPACE ABST.

Ref. Code:
UR0441

A70-23390 # Longitudinal flow around semiinfinite plate by the stream of anisotropic fluid at the Reynolds large numbers (Pozdovzhne oblikannia napivneskinchennoi plastinki potokom anizotropnoi ridini za velikikh chisel Reimoldsa). E. L. Taran and I. I. Shmakov (Kievskii Derzhavnyi Universitet, Kiev, Ukrainian SSR). Akademika Nauk Ukrain's'koj RSR, Dopovidi, Seriya A-Fiziko-Tekhnichni i Matematichni Nauki, vol. 32, Jan. 1970, p. 56-59. In Ukrainian.

The flow is considered of semiinfinite plate by the stream of incompressible anisotropic fluid at the Reynolds large numbers. To obtain boundary layer equations and those of the second approximation for the boundary layer the method of interlocked asymptotic expansions and the one of deformed coordinates are applied.

(Author)

ALS

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UDC 616.981.42-092:615.365.018.24

TIKHENKO, N. I. and TARAN, I. F., Antiplague Institute of the Caucasus and Transcaucasus, Stavropol

"Effect of Antireticular Cytotoxic Serum on the Pathogenesis of Brucellosis and Immunity Production"

Moscow, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, No 5, 1973, pp 65-71

Abstract: Experiments were performed on laboratory animals differing in sensitivity to brucellosis (rats, guinea pigs, mice) to study the effect of large doses of antireticular cytotoxic serum (ACS) on the development of the infectious process and production of postvaccinal immunity and in treatment of the disease. Rats repeatedly injected with ACS (0.2 ml in 0.8 ml of physiologic saline) became highly sensitive to the pathogen of brucellosis. Administration of ACS (0.3 ml) of guinea pigs 10 days before they were inoculated with a virulent Br. melitensis 565 culture resulted in earlier elimination of the pathogen than in the control. Administration of the same dose of ACS to mice had no significant effect on the course of the infection and brucella cultures were isolated from various organs as long as 180 days afterward. In guinea pigs vaccinated with a culture of Br. abortus 19 and then given doses of ACS,

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USSR

TIKHENKO, N. I. and TARAN, I. F., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 5, 1973, pp 65-71

the level of immunity was no higher than in the untreated control. The therapeutic efficacy of ACS combine with oxytetracycline was markedly greater than that of either ACS or the antibiotic alone.

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USSR

UDC 576.851.42.095.38:59

TARAN, I. F. and KOZLOV, M. P., Plague Research Institute of the Caucasus and Transcaucasia"

"Confinement" of Brucellae to Particular Animal Species as a Taxonomic Criterion"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1972, pp 110-115

Abstract: It is evident from the literature that the parasitic invasion by brucellae of certain hosts is genetically caused by specific determinants of pathogenicity, which are also responsible for the pathogenetic characteristics of the disease, site of the agent in the body, and patterns of the epizootic process. Thus, the presence of the microorganisms in particular animal species should be used as a principal criterion for determining the species of brucellae under study. Even in the rough forms each bacterial variant attacks certain animal species. Brucellae invading unnatural hosts generally die. If they survive, it is at the price of undergoing major changes in the enzymatic systems, metabolism, and antigenic structure and assuming the rough form. As a result of these profound physiological changes, the microorganisms develop broader adaptive mechanisms that enable them to exist in the new host which may then become a definitive host.

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- 8 -

USSR

UDC 616.981.42-022.1-092.9-097.5

TARAN, I. F. and RYBASOV, N. A., Scientific Research Antiplague Institute of the Caucasus and Transcaucasus and Stavropol Medical Institute

"Comparison of the Susceptibility and Infectious Sensitivity of Laboratory Animals and Sheep to Different Species of the Agent of Brucellosis"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1971, pp 97-101

Abstract: Studies were conducted on the susceptibility (ability to be infected, i.e., capacity of the agent to survive and spread to organs and tissues) and infectious sensitivity (intensity of the pathological process after entry of Brucella into the organism) of guinea pigs, mice, rats, and sheep to three virulent Brucella species - Bu. suis 1130, melitensis 16-M, and abortus 544. All the animals were susceptible, showing only slight differences according to the Brucella species tested. However, the animals differed considerably in degree of infectious sensitivity. Guinea pigs and mice exhibited the greatest susceptibility and infectious sensitivity. The sheep and particularly the rats were resistant to infection with all the Brucella species, but experienced only moderate pathological changes after infection with massive doses.

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- 9 -

USSR

UDC 616.981.42-022.39:576.851.42.063

TARAN, I. F., and RYBASOV, N. A., Scientific Research Antiplague Institute of
"Caucasus and Transcaucasus and Stavropol' Medical Institute

"Possible Means of Spread and Evolution of Brucella"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 5, May 71,
pp 34-38

Abstract: On the basis of data accumulated on the taxonomy of Brucella and their circulation among domesticated and wild animals, it can be safely assumed that Brucella arose a long time before the development of wild ungulates. The second stage of Brucella evolution was associated with ungulates, and the third stage began with the domestication of cattle and other animals. Brucella cultures isolated from wild rodents in natural foci of brucellosis are phylogenetically closest to the ancestral Brucella strain. Original research data indicate that the most suitable strains for the preparation of vaccines are Brucella of the greatest phylogenetic age, which have the greatest adaptive capacity.

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- 31 -

USSR

UDC 615.371:576.851.42/.012:542.9

TARAN, I. F., and ZAMAKHAYEVA, Ye I., Scientific Research Anti-plague Institute of the Caucasus and Transcaucasia

"Assessment of Prospects for the Development of Vaccines From Nonagglutinating Strains of Brucellae"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 48, No 2, Feb 71, pp 53-58

Abstract: Data on nonagglutinating brucellosis vaccines given in the literature and an experimental study of a vaccine strain of this type, Br. abortus No 3143-P, indicate that these vaccines are of no advantage with respect to the level of immunity produced by them as compared with conventional live vaccines, specifically those derived from the strain Br. abortus No 19. Strain No 3143-P, administered to guinea pigs, produced severe local lesions of the liver and spleen 6 mo after administration. An effect of this type may be produced by other nonagglutinating Brucella strains as well. The allergenic properties of non-agglutinating Brucella strains create difficulties as far as
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USSR

TARAN, I. F., and ZAMAKHAYEVA, Ye. I., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 48, No 2, Feb 71, pp 53-58

differentiation between postvaccinal and postinfectious allergic reactions is concerned. Lack of formation of agglutinins after administration of these strains does not solve the problem of distinguishing between postvaccinal and postinfectious immunological reactions in laboratory tests such as those given to sheep, in which disappearance of infection is established on the basis of negative results in the complement fixation reaction and an allergy test. Preparation and dosage of nonagglutinating vaccines are difficult. Introduction of these vaccines is not justified from the theoretical or practical standpoint.

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TARAN, V. A.

Spacecraft
Engineering

QUALITY EVALUATION OF ERGATIC PROCESSES IN SPACE VEHICLE CONTROL

10:12:45 54340

28 OCT 71

A. D. Korotkiy, V. A. Taran, R. V. Komel'nik, V. P. Sel'nikitskiy, A. V. Gerasimov, (Spacecraft Engineering)

pp 1-7

Abstract: The problem of quantitative evaluation of capacity for work by a human operator in a space vehicle control system is currently quite important. Such an evaluation is required for determining the level of the operator's training; to predict his reliability; to carry out professional selection, etc. The proposed method for evaluating the work capacity of a human operator is based on probability-iterative methods and the mathematical theory of linear differential transforms. The method takes into account human adaptability in the course of professional training and makes it possible to determine the probability of successful implementation of a task in the course of one control cycle under both normal and emergency flight conditions. The high information yield of this method is supported by a number of experiments.

The creation of modern and promising systems for controlling space vehicles is impossible without organizing optimum relationships among the functions of mechanisms, apparatus, equipment and other "nonliving" devices, on the one hand, and the human being controlling them, on the other. At whatever control level the man-operator may be situated, he must solve information-logic problems and appropriately impart carefully calculated reactions to the control organs.

USSR

UDC: 621.372

TARAN, V. A., KOFANOV, Yu. N., SHRAMKOV, I. G.

Methods of Quantitatively Estimating the Parametric Sensitivity of Electronic Systems"

Sb. nauchn. tr. Vladimir. politekhn. in-t (Collected Scientific Works of Vladimir Polytechnical Institute), 1970, vyp. 9, pp 24-30 (from RZh-Radio-tekhnika, No 5, May 71, Abstract No 5A69)

Translation: An analysis is given of methods for quantitatively evaluating the parametric sensitivity of electronic systems. Consideration is given to problems of finding the influence factor in designing electronic systems. Five illustrations, bibliography of eight titles. Resumé.

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USSR

UDC 621.396.6.019.3

TARAN, V. A., KOFANOV, Yu. N., SHRAMKOV, I. G.

"Parametric Sensitivity of Radio Equipment with Variable Parameters"

Metody razrab. radioelektron. apparatury. Materialy Seminara. Sb. 2 (Methods of Developing Radioelectronic Equipment. Materials of the Seminar, Collection 2), Moscow, 1970, pp 52-59 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 18A181)

Translation: This article contains a discussion of the method of determining functions of parametric sensitivity of linear nonstationary systems with continuous variation of the parameters during the operating process constituting the development of an influence operator method proposed earlier by the authors for stationary systems. The equations of sensitivity obtained can be solved in general form. They are solved approximately by means of a computer. There are three illustrations and a seven-entry bibliography.

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USSR

UDC 621.396.662

TARAN, V. A., LISNENKO, YU. P., GUKASOV, V. G.

"Device for Automatic Tuning of Standardized Modules of Radiotechnical Devices with Respect to Frequency Characteristic"

Metody razrab. radioelektron. apparatury. Materialy Seminara. Sb. 2 (Methods of Development of Radio Electronic Equipment. Materials of the Seminar. Collection 2), Moscow, 1970, pp 43-51 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D28)

Translation: It is noted that the accuracy of automatic tuning can be increased by using the minimum mean square error of the frequency characteristic throughout the entire continuous channel range as the tuning criterion. A schematic which realizes this principle is presented. This schematic belongs to the class of extremal automatic control systems. The bibliography has five entries.

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USSR

UDC 621.791.947.55.669.71:662.614

KUDINOV, V. V., Candidate of Technical Sciences (Institute of Metallurgy im. A. A. Baykov), ~~TARAN, V. D.,~~ Doctor of Technical Sciences (Deceased), BOCHENIN, V. I., Engineer (Moscow Institute of the Petrochemical and Gas Industry)

"Energy Balance of the Plasma Arc in Aluminum Cutting"

Moscow, Svarochnoye Proizvodstvo, No 6, Jun 70, pp 6-7.

Abstract: The energy balance of a plasma arc in cutting A99 aluminum (20 mm thick) was determined on the basis of calorimetric measurements and calculations of heat propagation in the solid metal. An increase in the arc energy produced a redistribution of the effective heat energy received by the metal. The amount of energy consumed in the melting of the metal increased from 15 to 40%, while the heat absorbed by the solid metal decreased from 60 to 40%. The parameters of the cutting conditions strongly affected the arc efficiency. The efficiency coefficient η_u increased from 70 to 80% with increasing arc energy, while the $\eta_c = q_1/N$ coefficient, where q_1 is the thermal energy absorbed by the solid metal and N is the arc power, decreased to a minimum value (40%). The reduction in cutting rate under the optimum value led to unproductive losses in overheating the melted metal. The energy level q_p/G necessary for evacuating 1/g of metal from the cutting region was constant and did not depend on cutting productivity.

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Acc. Nr.: AP0046751

Ref. Code: UROL

USSR

UDC 621.791.947:621.387.143

KUDINOV, V. V., TARAN, V. D., BOCHENIN, V. I.

"Thermal Effect of a Plasma Arc on Metal"

Kiev, Avtomaticheskaya Svarka (Automatic Welding), No 1, 1970, pp 1-4
(from Avtomaticheskaya Svarka, No 1, 1970, p 79)

Translation: This article contains a study of the processes of propagation and equalization of heat in a solid metal cut by a plasma arc. There are 5 illustrations and a 4-entry bibliography.

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USSR

UDC 621.791.8:669.715

KISELEV, S. N., KHAVANOV, V. A., ROSECHIN, V. V., and TARAN, V. I.

Gazoelektricheskaya Svarka Alyuminiyevykh Splavov (Gas-Electric Welding of Aluminum Alloys), Moscow, "Mashinostroyeniye," 1972, 176 pp

Translation of Foreword: Welded structural elements made of aluminum and its alloys find wide application in various branches of industry. It is difficult to find a single industry where aluminum welded parts are not used. It is worthwhile to note that structural assemblies made of aluminum alloys can function under complex conditions of loads, temperature and aggressive media. It is now possible to produce structural members of aluminum alloys which are capable of functioning for long periods under complex operating conditions. Parts made of aluminum alloys can be welded regardless of thickness: from fractions of a millimeter for bellows assemblies, to several hundreds of millimeters, as in the case of heat exchangers. It is almost impossible to say at what thickness aluminum parts can no longer be welded. Application of the electroslag welding method, which was developed at the Institute of Electric Welding imeni Ye. O. Paton, has opened great possibilities for the welding of very thick aluminum parts. Development of heat-resistant aluminum alloys is being actively pursued in the Soviet Union and abroad. Because of high specific strength and resistance to corrosion, aluminum alloys find wide

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USSR

KISELEV, S. N., et al, Gazoelektricheskaya Svarka Alyuminiyevykh Splavov (Gas-Electric Welding of Aluminum Alloys), Moscow, "Mashinostroyeniye," 1972
176 pp

application in the construction industry. Aluminum alloys are used for the production of wall panels, vitrages, casings, doors, various architectural decorative details, window casings, and pedestrian and transportation welded bridges. The high corrosion resistance of aluminum alloys has made possible their extensive use in the ship-building industry, especially for superstructures. Aluminum alloys are also used for the manufacture of large transportable containers, tanks, and other volume vessels, including railroad rolling stock. A large volume of welding of aluminum items is performed in the electrical industry. A gradual introduction of aluminum alloys in industries producing heat-exchanging equipment is one of the characteristic trends with respect to aluminum. Further application of welded aluminum structural elements in various branches of the machine-building industry depends to a great extent on new methods of welding aluminum alloys. Heretofore, aluminum alloys have been welded mainly in the horizontal position because of the high fluidity of molten aluminum. Lately, new welding methods have been developed which make it possible to weld aluminum alloys in all positions. For example, a new

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USSR

KISELEV, S. N., et al, Gazoelektricheskaya Svarka Alyuminiyevykh Splavov (Gas-Electric Welding of Aluminum Alloys), Moscow, "Mashinostroyeniye," 1972, 176 pp

pulsed welding method with fusable electrodes was developed at the Institute of Electric Welding. A new method for welding pipes by using pressure within the pipe was developed recently at the Scientific Research and Design Institute of Installation Technology (NIKIMFe). Automated welding of thick aluminum sheets in the vertical position was developed abroad. This method makes it possible to produce high-quality butt and angular welds. The development of new welding methods requires, as a rule, new welding equipment, in order to produce high-quality welds for structural members. This book summarizes the experience on production of weld assemblies from aluminum alloys in the Soviet Union and presents information on work carried out by Soviet and non-Soviet specialists on the production of weld construction members made of aluminum. Considering that this undertaking is very broad, the authors did not attempt to elucidate all problems related to the welding of aluminum alloys but emphasized mainly the gas-electric welding of aluminum. Welding of pipes and parts of large sizes that are used in critical assemblies are described in detail. Chapters 2, 7, and part of Chapter 6 were prepared by S. N. Kiselev;

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USSR

KISELEV, S. N., et al, Gazoelektricheskaya Svarka Alyuminiyevykh Splavov (Gas-Electric Welding of Aluminum Alloys), Moscow, "Mashinostroyeniye," 1972, 176 pp

Chapters 1 and 5 by V. V. Roshchin; Chapters 3 and 8 by V. I. Taran; and Chapters 4 and 6 by V. A. Khavanov.

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USSR

KISELEV, S. N., et al, Gazoelektricheskaya Svarka Alyuminiyevykh Splavov (Gas-Electric Welding of Aluminum Alloys), Moscow, "Mashinostroyeniye," 1972, 176 pp

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USSR

KISELEV, S. N., et al, Gazoelektricheskaya Svarka Alyuminiyevykh Splavov
(Gas-Electric Welding of Aluminum Alloys), Moscow, "Mashinostroyeniye," 1972,
176 pp

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USSR

UDC 533.92:621.039.61

(12)

ALEK SIN, V. F., BIRYUKOV, O. V., VISHNEVETSKIY, V. N., GEORGIYEVSKIY, A. V.,
GROT, Yu. I., DIKIY, A. G., ZISER, V. Ye., KITAYEVSKIY, L. KH., KONOTOP,
P. I., POGOZHEV, D. P., PELETMINSKAYA, V. G., SERGEYEV, Yu. F., SMIRNOV,
V. G., SUPRUNENKO, V. A., TOLOK, V. T., and TARAN, V. M.

"Development and Synthesis of the "Uragan" Stellarator and Investigation
of Magnetic Surfaces of High Shear"

Kiev, Fizika Plasmy i Problemy Upravlyayemogo Ternoyadernogo Sinteza
(Plasma Physics and Problems in Controlled Thermonuclear Synthesis --
collection of works) "Naukova dumka," No 3, 1972, pp 73-112

Abstract: After an initial section devoted to a review of the literature
on the magnetic surfaces of toroidal stellarators and the principles of
stellarators in general, the authors analyze the "Uragan" specifically.
In particular, this paper is concerned with the problems involved in
choosing the parameters of the magnetic system for the racetrack stel-
larator to obtain magnetic surfaces with high shear. This last term is
defined as the extent of crossing of the magnetic lines of force. The
synthesis and adjustment of the magnetic system are also examined, and
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USSR

12
ALEKSIIN, V. F., et al., Fizika Plasmy i Problemy Upravlyayemogo
Termoyadernogo Sintez, "Naukova dumka," No 3, 1972, pp 73-112

The results are given of an investigation into the instrument's magnetic surfaces. Computations worked out on an electronic computer for the design of the magnetic system are described, and differences between the "Uragan" and the "Sirius" stellarators are indicated. A comparative table of the parameters for various types of stellarator is given; it shows that the "Uragan" is one of the more powerful thermonuclear machines, with a high shear value for its substantial 10 koeersted magnetic field intensity. This article is liberally illustrated with photographs and line drawings and has a bibliography of 51 titles.

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- 65 -

USSR

UDC 533.92:621.039.61

ALEKSIIN, V. F., BIRYUKOV, O. V., VISHNEVETSKIY, V. N., GEORGIYEVSKIY, A. V., GROT, Yu. I., DIKIY, A. G., ZISER, V. Ye., KITAYEVSKIY, L. Kh., KONOTOP, P. I., POGOZHEV, D. P., PELETMINSKAYA, V. G., SERGEYEV, Yu. F., SMIRNOV, V. G., SUPRUNENKO, V. A., TOLOK, V. T., TARAN, V. M.

"Development and Production of the Magnetic System of the 'Uragan' Stellarator and a Study of Magnetic Surfaces With Large Shear"

Fiz. plazmy i probl. uprav. termoyader. sinteza. Resp. mezhd. sb.
(Plasma Physics and Problems of the Controlled Thermonuclear Fusion. Republic Interdepartmental Collection), 1972, No. 3, pp 73-112 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G279)

Translation: This paper concerns the study of the magnetic system of the three-loop "Uragan" stellarator-racetrack. Considerations concerning the selection of optimal parameters of the magnetic system of the stellarator are discussed. The equipment of the "Uragan" is briefly described. An experimental study of the magnetic surfaces made with the aid of low-energy electron beams showed that in the "Uragan" stellarator-racetrack with

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USSR

ALEKSIN, V. F., et al, Fiz. plazmy i probl. upravl. termoyader. sinteza.
Resp. mezhved. sb., 1972, No. 3, pp 73-112

individually controlled cylinders there are closed magnetic surfaces with high shear values (~ 0.09) and angle of rotational conversion ($\sim 240^\circ$). The experimental data are compared with calculated values obtained on the BESM-6 computer.

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THE REMOTE RESULTS OF CORTICOSTEROID THERAPY
OF PATIENTS WITH INFECTIOUS HEPATITIS

Kortev, A. I.; Lyasheva, A. P.; Taran, V. V.

Summary

The authors examined 318 patients convalescing from infectious hepatitis in periods up to five years who were subjected to steroid (198 cases) and routine desintoxication (120 cases — control) therapy. After steroid therapy recovery ensued in 65.9 per cent of patients, in the control group — in 53.6 per cent. Hormone therapy reduces the incidence of formation of chronic hepatitis. There was not a single case of liver cirrhosis, whereby the number of relapses decreased by 2 1/2 times. Under the influence of steroids there was seen a marked tendency to normalization of the metabolism of trace elements (copper, cobalt, tungsten and manganese) studied colorimetrically, this being less noticeable in routine therapy, however, their content in the blood, urine and feces after an acute stage of the disease does not reaches normal values. The accumulation of cobalt and tungsten in the blood of convalescents within 12 months was noted in persons with residual manifestations of hepatitis, moreover, the level of cobalt was above normal by 103.5 per cent, that of tungsten — by 41.1 per cent, whereas in persons with chronic hepatitis a distinct cupremia was observed.

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TARAN, Ye. Yu.

JPRS 55982
15 May 72

PART II. BOUNDARY LAYER

BOUNDARY LAYER OF AN ANISOTROPIC FLUID

[Article by Ye. Yu. Taran and Yu. I. Shmakov, Kiev, Kiev, Russian.
No 5, 1971, "Izvestiya Akademii Nauk SSSR," pp 38-42]

In the laminar motion of solutions of high polymers in shear currents one notes the orientation of molecules of the high polymers relative to the flow lines. This leads to an anisotropy of molecular transfer and accordingly a dependence of the stress tensor on the direction associated with this orientation. Accordingly, rheological models of a fluid of this type must contain as one of the parameters a vector indicating this direction.

A rheological model of a simple anisotropic fluid satisfying the invariance principle [1] was proposed by Erickson in 1963 [2]. We will examine an incompressible fluid, each of whose particles can be represented as an ellipsoid of revolution having a definite orientation dependent on the flow. We will assume that the stress at a point is a function of the unit vector n_i characterizing the orientation of the ellipsoid of fluid, and that this function is linearly dependent on the velocity gradient. We will assume that an individual ellipsoid, in the basis of the invariance principle, Erickson represented the following dependences for the stress tensor components t_{ij} and the vector n_i :

$$t_{ij} = -p\delta_{ij} + 2\mu d_{ij} + (\mu_1 + \mu_2 d_{kk})n_i n_j + 2\mu_3 (d_{ik} n_j + d_{jk} n_i) \quad (1)$$

$$n_i = \omega_i n_j + \lambda (d_{ij} n_j - d_{jj} n_i n_j) \quad (2)$$

where p is pressure; d_{ij} are the components of the tensor of the rates of deformation; ω_{ij} are vorticity components; $\mu, \mu_1, \mu_2, \mu_3, \lambda$ are constants.

TARAN, Yu. A.

50-JPRS 55935
09 May 1972

Galicia

UDC 531.363.
INFLUENCE OF THE MERCURY CUSHION IN THE COMBINED HYDROSTATIC
SUPPORT ON GYROCOMPASS ACCURACY UNDER IRRREGULAR ROLLING CON-
DITIONS

[Article by D. P. Muzlov and Yu. A. Taran; Leningrad, Priboro-
stroeniye, Russian, Vol 15, No 5, 1972, pp 77-79]

Effect of the mercury cushion of a gyro-
compass (GC) of the "Amur" type on the
accuracy of its indications upon random
rolling of its base is examined. It is
shown that incomplete mutual correlation
of the mercury cushion perturbations
during rolling causes the appearance of
a supplementary compass error.

The question of the hydrostatic support effect on the
behavior of gyro-devices is examined in a number of publica-
tions [1], [2], [3]. Thus it is shown in [3] that a hydro-
static support practically does not introduce any errors in
the GC indications. GC's analogous in construction and para-
meters but with combined hydrostatic supports (a liquid sup-
port with centering coils and mercury cushion) have less
accuracy. This permits the assumption that the contact be-
tween the surface of the sensor (S) and the mercury cushion
is one of the reasons for the appearance of a supplementary
error in a GC with a combined hydrostatic support.

In order to examine the dynamics of the mercury cushion,
we shall make use of the results of [4], where it was shown
analytically that with a small depth of heavy liquid oscillat-
ing in a spherical cavity, its sufficiently good mechanical
analog is a rigid spherical pendulum. Experimental investiga-
tions also confirmed the legitimacy of such a substitution in
the frequency range from zero to the natural frequency in
oscillations of the mercury cushion, approximately equal to
10 sec⁻¹. Proposing in the following to limit ourselves to
the investigation of small oscillations of the mercury cushion

USSR

UDC: 531.383

MUZLOV, D. P. and TARAN, Yu. A.

"Effect of a Mercury Cushion of Combined Hydrostatic Suspension on the Accuracy of a Gyrocompass Under Irregular Rolling of its Base"

Leningrad, Priborostroveniye, No 2, 1972, pp 77-79

Abstract: Combined hydrostatic suspension is here defined as a fluid suspension with centering coils and a mercury cushion. In this article, the authors investigate the dynamics of the mercury cushion using the results of an earlier paper (I. V. Bogoryad, K resheniyu zadachi o kolebaniyakh zhidkosti, chastichno zapolnennoy volosty, variatsionnym metodom -- Solving the Problem of Oscillations in a Fluid Partially Filling a Cavity by the Variation Method -- PMM, 1962, vol 26, No 6) in which it is analytically shown that, for a shallow heavy fluid oscillating in a spherical cavity, a hard spherical pendulum is an adequate mechanical analog. This idea was also experimentally confirmed for the frequency range of 0 to 10 Hz. As an example of the application

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USSR

MUZLOV, D. P. and TARAN, Yu. A., Priborostryeniye, No 2, 1972, pp 77-79

of their formula for finding the mathematical expectation of error in the gyrocompass, the authors use the "Amur" type of gyrocompass under orbital motion of the center of gravity of a ship in a swell. They are associated with the Ryazan Radio Engineering Institute.

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Gyroscopes

55435
SO: JPRS 63400
09 MAY 1972

CLIRIA

INFLUENCE OF THE MERCURY CUSHION IN THE COMBINED HYDROSTATIC
SUPPORT ON GYROCOMPASS ACCURACY UNDER IRREGULAR ROLLING CON-
DITIONS

[Article by D. P. Muzic and M. A. Taran; Leningrad, Priboro-
stroevskiy, Izvestiya, Vol 15, No 2, 1971, pp 77-79]

Effect of the mercury cushion of a gyro-
compass (GC) of the "Priroda" type on the
accuracy of its indications with random
rolling of its base is examined. It is
shown that incomplete mutual correlation
of the mercury cushion perturbations
during rolling causes the appearance of
a supplementary compass error.

The question of the hydrostatic support effect on the
behavior of gyroscopes is examined in a number of publica-
tions [1, 2, 3]. Thus it is shown in [3] that a hydro-
static support, practically does not introduce any errors in
the GC indications. GC's analogous in construction and para-
meters but with combined hydrostatic supports (a liquid sup-
port with centering coils and mercury cushions) have less
accuracy. This permits the assumption that the contact be-
tween the surface of the sensor (S) and the mercury cushion
is one of the reasons for the appearance of a supplementary
error in a GC with a combined hydrostatic support.

In order to examine the dynamics of the mercury cushion,
we shall make use of the results of [4], where it was shown
analytically that with a small depth of heavy liquid oscillat-
ing in a spherical cavity, its sufficiently good mechanical
analog is a rigid spherical pendulum. Experimental investiga-
tions also confirmed the legitimacy of such a substitution in
the frequency range from zero to the natural frequency of
10 sec⁻¹. Proposing in the following, approximately equal to
the investigation of small oscillations of the mercury cushion

USSR

DERGACHEV, P. B., DYAD'KIN, V. P., SAVIN, N. S., SEVEROV, L. A., and
TARAN, Yu. A.

"Principal Characteristics of the Random Rolling of Heavy Aircraft During
Flight in Turbulent Atmosphere"

Tr. Leningr. in-t aviats. priborostr. (Works of Leningrad Institute of
Aircraft Instrument Manufacture), 1970, vyp. 66, pp 174-179 (from RZh-
Mekhanika, No 1, Jan 71, Abstract No 1B392 by G. V. Vronskiy)

Translation: The article considers equations of motion of aircraft equipped
with an automatic pilot which maintains horizontal flight at a constant speed
despite exposure to random vertical and transverse uncorrelated gusts of wind
possessing the same spectral density. The solution was accomplished with
the help of analog computers; at the same time the generation of random
gusts with prescribed spectral density was effected by means of a shaping
filter of the "white" noise produced by a random signal generator. During
simulation, pitch-, bank- and yaw-angle signals, as well as their angular
velocities and accelerations were simultaneously tape-recorded on a multi-
channel oscillograph. After processing on the correlator, autocorrelation
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USSR

DERGACHEV, P. B., et al., Tr. Leningr. in-t aviats. priborostr. (Works of Leningrad Institute of Aircraft Instrument Manufacture), 1970, vyp. 66, pp 174-179 (from RZh-Mekhanika, No 1, Jan 71, Abstract No 1B392 by G. V. Vronskiy)

functions of these signals were obtained, which are represented in the form

$$R(\tau) = D [e^{-\alpha_1 |\tau|} \cos \beta_1 \tau + \mu e^{-\alpha_2 |\tau|} \sin \beta_2 \tau]$$

The authors present a table of coefficients α_1 , α_2 , β_1 , β_2 , μ , corresponding to the above-indicated signals.